



Montana Fish, Wildlife & Parks

Montana Department of Fish, Wildlife & Parks
1420 E. 6th Ave, Helena, MT 59620

Environmental Assessment (8/21/07 draft)

Greenhorn Creek Westslope Cutthroat Trout Conservation Project: Removal of Nonnative Trout

PART I. PROPOSED ACTION DESCRIPTION

1. Type of Proposed State Action:

The proposed action is to remove nonnative trout from the upper Greenhorn Creek drainage using mechanical collection methods including electrofishing and trapping. The removal of nonnative trout would serve to secure one of the few remaining native westslope cutthroat trout (WCT)(*Oncorhynchus clarki lewisi*) populations in the Ruby River drainage by reducing or eliminating competition from nonnative brook trout (*Salvelinus fontinalis*) and possible hybridization from nonnative rainbow trout (*O. mykiss*). In conjunction with removal of nonnative trout, temporary and permanent barriers to upstream fish migration would be constructed at the lower end of the project to prevent additional movement of nonnative trout into the drainage.

2. Agency Authority for the Proposed Action

- Montana Fish, Wildlife & Parks (FWP) is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under 87-5-107 or the federal Endangered Species Act. Section 87-1-201(9)(a), M.C.A.
- FWP signed the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (FWP 1999) which states: “The management goal for WCT in Montana is to ensure the long-term, self sustaining persistence of the subspecies within each of the five major river drainages they historically inhabited in Montana, and to maintain genetic diversity and life history strategies represented by the remaining local populations.”

3. Name of Project

Greenhorn Creek Westslope Cutthroat Trout Conservation Project: Removal of Nonnative Trout

4. Project Construction and Completion

Estimated Construction/Commencement Date:

- Initial removal of nonnative trout would begin in the fall of 2007. Temporary and permanent fish migration barriers would be installed as removal efforts progressed to the lower reaches of the drainage, with likely construction between 2008 – 2011.

Estimated Completion Date:

- Removal efforts would continue until nonnative trout are eradicated from the project reach. Similar mechanical removal efforts in project areas < 2 miles in stream length have typically taken 3 – 5 years to complete; however, due to the large size of the Greenhorn Creek drainage (12 mile long project reach) the duration of the project is uncertain. If removal efforts do not indicate significant progress within 4 - 6 years, then other removal methods (e.g. fish toxicants) would be evaluated through an additional Montana Environmental Assessment Act (MEPA) process.

5. Location Affected by Proposed Action (county, range and township)

Greenhorn Creek drainage, Madison County, R4W, T8S. The project area includes state, BLM, USFS, and private lands (Turner Enterprises, Inc.).

6. Project Size: number of acres that would be directly affected that are currently:

1. Developed/ residential – 0 acres
2. Industrial – 0 acres
3. Open space – 0 acres
4. Wetland/ riparian – 12 stream miles
5. Floodplain – < 1 acre
6. Irrigated cropland – 0 acres
7. Dry cropland – 0 acres
8. Forestry – 0 acres
9. Rangeland – 0 acres
10. Other – 0 acres

7. Map/site plan: See Figure 1.

8. Local, State or Federal Agencies with overlapping or additional jurisdiction.

The U.S. Forest Service (Beaverhead-Deerlodge National Forest) (FS), Bureau of Land Management (BLM), and MT Department of Natural Resources and Conservation manage lands adjacent to Greenhorn Creek. Along with FWP, these agencies are cosigners of a Memorandum of Understanding and Conservation Agreement (MOU; FWP 1999) that outlines measures necessary for conservation of WCT in Montana. The MOU states that cosigners agree to “protect all genetically pure WCT populations”, and that conservation actions may include isolation from, and suppression or eradication of “introduced species that compete with, hybridize with, or prey on genetically pure WCT”.

(a) Permits:

No permits are necessary for mechanical nonnative trout removal efforts. Prior to construction of fish migration barriers (permanent or temporary), FWP, the BLM or FS will be filing for necessary permits that may include a FWP Stream Protection Act 124 permit, U.S. Army Corp of

Engineers 404 permit, and MT Department of Environmental Quality 318 Authorization. These standard permitting processes will be used to help identify and mitigate potential impacts (channel modifications) of the barriers and their installation. In addition, the appropriate National Environmental Protection Act (NEPA) processes will be followed if any barrier is constructed on FS or BLM administered land.

(b) Funding:

FWP, FS, BLM, and Turner Enterprises, Inc. (private property owner), would be cooperators in implementing and funding this project. Funding would include resources that are currently allocated by the cooperators towards WCT conservation efforts, and may include other resources (e.g., Future Fisheries Grant Program) that would be applied for if additional resources become necessary. Anticipated resource needs are detailed on page 12.

(c) Other Overlapping or Additional Jurisdictional Responsibilities:

<u>Agency Name</u>	<u>Type of Responsibility</u>
Bureau of Land Management	Federal land management
MT Dept. of Natural Resources and Conservation	State land management
U.S. Forest Service, Beaverhead-Deerlodge National Forest	Federal land management
Turner Enterprises, Inc., Snowcrest Ranch	Private property owner

9. Summary of the proposed action:

BACKGROUND

Need for the Proposed Action

Westslope cutthroat trout, Montana's state fish, has declined in abundance, distribution, and genetic diversity throughout its native range (Shepard et al. 2003). Reduced distribution of WCT is particularly evident in the Missouri River drainage of Montana where genetically pure populations are estimated to persist in about 5% of habitat they historically occupied. Major factors contributing to this decline include competition with nonnative brook, brown (*Salmo trutta*) and rainbow trout that were first introduced to Montana in the 1890's, hybridization with rainbow and Yellowstone cutthroat trout (*O. c. bouvieri*), habitat changes, and isolation to small headwater streams. Due to these threats, most remaining WCT populations in the Missouri River drainage are considered to have a low likelihood of long-term (100 years) persistence unless conservation actions are implemented (Shepard et al. 1997).

Greenhorn Creek, a tributary to the Ruby River, maintains one of the nine remaining genetically pure WCT populations in the Ruby River subbasin. WCT currently occupy about 9 miles of stream in the Greenhorn Creek drainage, which includes the mainstem and four tributaries – the South Fork, North Fork, Meadow Fork, and Dark Hollow Creek (Figure 1). In 2004, a comprehensive fish distribution and abundance survey determined that WCT are rare and greatly outnumbered (3:1 ratio) by brook trout in most reaches of the drainage (Beaverhead-

Deerlodge National Forest data files, Dillon). The study found that WCT were nearly absent from the entire South Fork and the upper reaches of the North Fork, but more common in the middle reaches of the North Fork and the upper reach of Dark Hollow Creek. Brook trout are abundant throughout the drainage with the exception of a 1.5 mile reach in upper Dark Hollow Creek that is currently isolated by a natural barrier (see Figure 1).

Brook trout displacement of WCT is common where the species range overlap, and is recognized as an important reason for the loss of many WCT populations. This displacement has been attributed to a size and competitive advantage young brook trout incur due to timing of reproduction (Shepard and Nelson 2004). Without efforts to control brook trout, it is probable that over time they will completely displace WCT from the Greenhorn Creek drainage, with the exception of upper Dark Hollow Creek where the barrier prevents brook trout invasion. Complete replacement of WCT by brook trout may take many years to occur, however, as the WCT population continues to decline in abundance and distribution it becomes more susceptible to inbreeding depression and extreme habitat stressors like fire, flood, and severe drought.

In addition to brook trout, WCT in the Greenhorn Creek drainage are threatened by hybridization with nonnative rainbow trout. Genetic surveys indicate that WCT in Dark Hollow Creek, the Meadow Fork, and upper reaches of the North Fork are genetically pure (FWP data files, Helena). However, genetic samples from the lower reach of the North Fork in 1997 and 2006 indicated slight (<1% - 3.3%) hybridization with rainbow trout. Additional genetic samples collected in the same reach in 2004 detected no hybridization. No barriers completely isolate Greenhorn Creek from rainbow trout migrating from the Ruby River, which is the likely source of hybridized fish observed in the lower North Fork in 1997. Connection between the Ruby River and Greenhorn Creek, and the potential for hybridization because of this connection, is as significant a threat to the WCT population as is brook trout competition.

Preservation of remaining WCT populations, like in the Greenhorn Creek drainage, is the primary strategy for conservation of WCT in Montana (FWP 1999). Few WCT populations are considered “secure” in the Missouri River basin, and efforts to protect remaining populations are necessary to ensure continued persistence of the species in the basin. These rare local populations maintain the remaining genetic diversity of the species, and each may perpetuate adaptive traits that are important to the species as whole (Leary et al. 1998). For these reasons, remaining populations will be an invaluable source for restoring WCT to streams they once occupied, and their disappearance would be a significant loss for WCT conservation efforts.

Summary of Proposed Action

The proposed action is to remove nonnative trout from 12 miles of stream in the Greenhorn Creek drainage using mechanical collection methods including electrofishing and trapping. A permanent barrier to upstream fish migration would be placed at the lower end of the project area to prevent additional movement of nonnative trout into the drainage. These actions would help secure the genetically pure WCT population in upper Greenhorn Creek drainage by reducing competition and threat of hybridization from nonnative trout, and would result in increased WCT distribution and abundance.

Electrofishing would be the primary method to capture and remove brook trout from the project

area. Electrofishing is a common fish collection technique where battery or generator produced electricity is applied to a stream to stun and collect fish. Electrofishing has been used in several WCT conservation efforts in Montana to eradicate brook trout from streams similar in size to those in the Greenhorn Creek drainage (Shepard and Nelson 2004). Specifically, removal efforts would include several, 2 or 3-man crews using backpack electrofishing equipment to capture fish. Various sections of the stream would be electrofished over a one to four day period, and up to four periods per year. Removal efforts would typically occur during late summer or fall after WCT have spawned and eggs have hatched. Brook trout may also be captured by placing small, funnel-shaped traps in the stream during the late August to October spawning period.

Captured nonnative trout will be euthanized and disposed of on-site. The relocation of these fish to the lower reaches of the Greenhorn Creek drainage, or other streams, would be harmful to fish populations already persisting in those areas by increasing competition for limited habitat. Transfer of these fish would also include the potential of introducing pathogens into new waters. All captured WCT would be released back into the stream. Hybrid trout are often visually similar to WCT; consequently, if additional genetic sampling determines that hybridized trout are currently established within specific reaches of the drainage, then all fish would be removed from that reach.

Due to the wide distribution of nonnative trout in the project area (about 12 stream miles), removal efforts would target different stream reaches during specific project phases. Initially, effort would be concentrated in the upper reaches of the North Fork and Meadow Fork (Phase 1; Figure 2). These stream sections are upstream of an historic mining related dam that provides short-term isolation from downstream reaches (Photo 1). When removal efforts in Phase 1 result in significant declines in abundance of nonnative trout, effort would be shifted to middle reaches of the North Fork, and the lowest reach of Dark Hollow (Phase 2; Figure 2). A temporary barrier would be required to isolate these sections of stream from the lower North Fork and the South Fork. With completion of a permanent barrier on Greenhorn Creek (Figure 2), and significant declines in abundance of nonnative trout in Phase 2, effort would concentrate on the lower reaches of the North Fork, the South Fork, and a short section of the mainstem (Phase 3; Figure 2).

Progress would be reviewed after 4 to 6 years to determine if mechanical removal methodologies are sufficient to eradicate nonnative trout in the project area. If mechanical methodologies are determined to be insufficient, then other removal methods (e.g. fish toxicants) would be evaluated through an additional environmental assessment (MEPA) process.

A permanent barrier to upstream movement of fish would be constructed at the lower end of the project reach to prevent recolonization by nonnative trout (Figure 1). The barrier would consist of a dam-like structure designed to prevent upstream movement utilizing water velocity and height (see Picture 2 for an example). Prior to construction, a suitable barrier design would be subjected to state and federal permitting processes that will seek to minimize and mitigate potential impacts (e.g., channel modification) of the barrier and its installation. A temporary barrier would also be placed in the stream between the Phase 1 and Phase 2 efforts (Figure 1 and Figure 2). This short-term barrier would consist of a modification of an existing feature of the stream (e.g. fortification of a debris jam), placement of a perched culvert at an existing road crossing, or the installation of a structure similar to a small irrigation head-gate. As necessary,

the temporary barrier would also be evaluated through state and federal permitting and NEPA processes. The temporary barrier would be removed and the site reclaimed (natural channel and bank configuration) when it is no longer necessary.

Benefits of the Proposed Project

The primary purpose of this project is to help achieve the goal of ensuring the long-term, self-sustaining presence of WCT in the upper Missouri River drainage by securing a genetically pure WCT population in the Greenhorn Creek drainage. With successful removal of nonnative trout, the benefits of the proposed effort would include:

- Securing a rare, upper Missouri River WCT population. Greenhorn Creek is an exceptional opportunity to secure a native WCT population in a relatively large drainage. If completed as proposed, the project would result in one of the largest genetically pure WCT populations in the upper Missouri River basin.
- Fulfilling the State's obligation to protect all genetically pure WCT populations (FWP 1999).
- Preserving a genetically pure WCT population that may be used as a donor source to help establish WCT in additional streams.
- Reducing threats that may encourage requests for listing WCT under the Endangered Species Act.

10. Agencies consulted during preparation of the EA:

- Montana Fish, Wildlife & Parks, Bozeman, Dillon, Helena and Townsend
- Bureau of Land Management, Dillon Field Office, Dillon
- U.S. Forest Service, Beaverhead-Deerlodge National Forest, Ennis and Dillon

PART II. ENVIRONMENTAL REVIEW

1. Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.

A. PHYSICAL ENVIRONMENT

1. <u>LAND RESOURCES</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated*	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. **Soil instability or changes in geologic substructure?			X		Yes	1a.
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. **Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?				X	Yes	1d.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other: N/A						

Comment 1a. Construction of the migration barriers would cause some disturbance of the stream bank and channel. Appropriate barrier designs and installation techniques would be developed and reviewed through state and federal permitting processes to minimize and mitigate these impacts. If constructed on federal lands, the BLM or Beaverhead-Deerlodge National Forest will be the lead agencies for the barrier construction and additional NEPA public involvement processes.

Minor pruning of brush along and over the stream channel, and removal of some overhanging logs would occur to permit better access to the stream and increase electrofishing efficiency. No vegetation will be killed, and logs that are clearly associated with channel stability (i.e., keyed into stream bed or bank) will not be removed.

Comment 1d. Installation of a dam-like barrier structure will cause deposition and modification of the stream channel immediately adjacent to the barrier site. Measures will be taken to prevent these impacts from becoming significant (e.g., lateral channel migration or erosion from barrier failure), and will include appropriate barrier designs based on the site and drainage characteristics, and annual structure inspection and maintenance as necessary.

2. <u>AIR</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated*	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. **Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a)		X				
f. Other: N/A						

3. <u>WATER</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated*	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		Yes	3a.
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ****For P-R/D-J, will the project affect a designated floodplain? (Also see 3c)				X	Yes	3l.
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)		X				
n. Other: N/A						

Comment 3a. Some increases in turbidity may occur over a short period of time during barrier construction. Turbidity will be mitigated through the Department of Environmental Quality 318 Authorization review process that will identify barrier installation practices that minimize turbidity.

Comment 3l. Installation of a dam-like barrier structure will cause deposition and modification of the stream channel immediately adjacent to the barrier site. Measures will be taken to prevent these impacts from becoming significant (e.g., lateral channel migration or erosion from barrier failure), and will include appropriate barrier designs based on the site and drainage characteristics, and annual structure inspection and maintenance as necessary.

4. <u>VEGETATION</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				4a.
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				
g. Other: N/A						

Comment 4a. Minor pruning of brush along and over the stream channel, and removal of some overhanging logs would occur to permit better access to the stream and increase electrofishing efficiency. No vegetation will be killed, and logs that are clearly associated with channel stability (i.e., keyed into stream bed or bank) will not be removed.

** 5. FISH/WILDLIFE Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Deterioration of critical fish or wildlife habitat?			X		No	5a
b. Changes in the diversity or abundance of game animals or bird species?			X		No	5b
c. Changes in the diversity or abundance of nongame species?		X				
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?			X		No	5e.
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. ***For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				
j. Other: N/A						

Comment 5a. Removal of some over-hanging logs and pruning of woody vegetation is proposed to increase electrofishing efficiency for removal of nonnative trout. This is anticipated to be a minor and short-term impact to remaining fish for several reasons: vegetation will rapidly re-grow, logs associated with the channel will not be removed, and the stream will remain shaded from conifer trees not impacted by woody vegetation pruning.

Comment 5b. The proposed action is expected to result in an increase in native WCT abundance and a decrease in nonnative brook trout abundance in the upper Greenhorn Creek drainage (Figure 1). This is considered a minor impact because brook trout will continue to be abundant in numerous streams in the Ruby River drainage. The project is intended to increase the abundance and range of WCT, a rare and unique resource with limited distribution in the Ruby River drainage. Westslope cutthroat trout are currently protected by catch-and-release regulations in most streams in the central fish district, including Greenhorn Creek and its tributaries. Restoration efforts like the proposed action are intended to increase overall WCT abundance, which may result in greater fishing opportunities and harvest for this rare native species.

Comment 5e. The proposed action will create a barrier to prevent upstream migration of fish into the upper reaches of the Greenhorn Creek drainage (Figure 1), which is the intended consequence of the structure. The barrier is specifically targeted at preventing upstream movement of nonnative trout; however, it could impede other species as well. WCT, nonnative brook trout, sculpin (*Cottus sp.*), and potentially nonnative rainbow trout, are the only species in the proposed project reach. Sculpin are common and widely distributed throughout Ruby River drainage and Montana, and the potential impact of the barrier would be negligible outside the project reach. The barrier is necessary for protection of the WCT population.

B. HUMAN ENVIRONMENT

6. <u>NOISE/ELECTRICAL EFFECTS</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Increases in existing noise levels?		X				
b. Exposure of people to serve or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other: N/A						

7. <u>LAND USE</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other: N/A						

8. <u>RISK/HEALTH HAZARDS</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		X				
e. Other: N/A						

9. <u>COMMUNITY IMPACT</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other: N/A						

10. <u>PUBLIC SERVICES/TAXES/UTILITIES</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:			X		No	10a
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. **Define projected revenue sources			X		No	10e
f. **Define projected maintenance costs.			X		No	10e
g. Other: N/A						

Comment 10a. Government agency review of permits (FWP Stream Protection Act, U.S. Army Corp of Engineers 404, and MT Department of Environmental Quality 318 Authorization) will be required for installation of the migration barrier.

Comment 10e. This project would be part of the larger WCT conservation program in FWP Region-3, and would be primarily implemented by FWP staff dedicated to such efforts. The FWP Region-3 WCT conservation program is funded through FWP, federal (U.S. Forest Service and Bureau of Land Management), and private (Montana Trout Unlimited, Turner Enterprises, Inc.) dollars. As part of their respective fisheries programs, the Beaverhead-Deerlodge National Forest, the BLM, and Turner Enterprises, Inc., would participate in the nonnative trout removal efforts, and dependent on barrier location, various permitting

and NEPA aspects of barrier construction. Expected labor demands for the removal efforts would be 25 – 100 man-days per year until brook trout are eradicated from the project reach.

** 11. <u>AESTHETICS/RECREATION</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				11a.
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X		Yes	11c.
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
e. Other: N/A						

Comment 11a. A permanent barrier structure would be placed in to prevent migration of nonnative trout into the project reach. The location of the barrier is anticipated to be on private property (Figure 2). See Photo 2 of a barrier example.

Comment 11c. Angling and harvest opportunities for brook trout would be reduced in the upper reaches of the Greenhorn Creek drainage. However, high quality brook trout fisheries are common in the Ruby River basin. Anglers will still be permitted to fish for WCT in the Greenhorn Creek and its tributaries, but are currently required to release captured WCT. Restoration efforts like the proposed action are intended to increase overall WCT abundance, which may result in greater fishing opportunities and harvest for this rare native species. Therefore, the impact is minor and temporary.

12. <u>CULTURAL/HISTORICAL RESOURCES</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. **Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		X				
e. Other: N/A						

SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. ****For P-R/D-J, list any federal or state permits required.		X				13g.

Comment 13g. FWP Stream Protection Act 124, U.S. Army Corp of Engineers 404, and MT Department of Environmental Quality 318 Authorization would be required for installation of the migration barrier.

PART II. ENVIRONMENTAL REVIEW, CONTINUED

2. Description and analysis of reasonable alternatives (including the no action alternative) to the proposed action whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternatives would be implemented:

Three alternatives were considered during the preparation of this EA:

1) No Action Alternative

The predicted consequences of the “No Action” alternative are: Competition and potential hybridization from nonnative trout would not be decreased in the Greenhorn Creek drainage, and the possibility of a genetically pure, local WCT population ultimately becoming hybridized or extirpated due to these and associated threats would remain high. There would be no costs associated with nonnative trout removal efforts and barrier construction, neither of which would be undertaken.

2) Alternative 1: Chemical Piscicide Treatment

The piscicides (fish toxicants) antimycin and rotenone could be used to eradicate nonnative trout from the project reach; however, though safe and effective, for two primary reasons piscicides are not currently suitable removal methods for the Greenhorn Creek drainage. One, piscicide use would require collection and holding of existing WCT prior to application. Currently, there are no suitable locations to transfer WCT to during piscicide treatment, and such a transfer would include the possibility of disease transmission. Two, a piscicide treatment would result in the loss of a significant number of small (young-of-year and age-1) WCT that can not be effectively captured and relocated prior to treatment. Exposing an already threatened WCT population to such losses could result in significant declines in the abundance and genetic viability of the population.

A piscicide treatment could be considered in the future if the following conditions are met: after a 4 – 6 year period mechanical removal efforts are not found to be sufficient to expect complete nonnative trout eradication; nonnative trout have been removed from an isolated reach of the drainage allowing transfer of WCT to the reach; and, the status of the WCT population is sufficient to allow some mortality from a piscicide treatment. Piscicides would only be considered through an additional, and public, environmental assessment process (MEPA).

3) Preferred Alternative: Removal of nonnative trout from the upper reaches of Greenhorn Creek and its associated tributaries using mechanical methods.

The predicted consequences of the Preferred Alternative were detailed and discussed in Part I and Part II.

3. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

None

PART III. NARRATIVE EVALUATION AND COMMENT

Addressed in Part I and Part II

PART IV. EA CONCLUSION SECTION

1. Based on the significance criteria evaluated in this EA, is an EIS required (YES/NO)? If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.

No. An EIS is not required under the Montana Environmental Policy Act (MEPA) because the project lacks significant impacts to the physical or human environment. Therefore, the impacts are appropriately addressed through an Environmental Assessment. The primary impact associated with the project is reduced abundance and distribution of nonnative trout in the headwaters of Greenhorn Creek drainage, which is the intended consequence of the action.

2. Describe the level of public involvement for this project if any and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?

The public will be notified through local newspapers and through contact with local sports groups and others who have previously indicated interest in similar projects. This EA will also be published on the Montana Fish, Wildlife & Parks web page (<http://fwp.mt.gov/default.html>). Public comments can be given at the FWP web page, or in writing to: Lee Nelson, Montana Fish, Wildlife & Parks, 415 South Front Street, Townsend, MT 59644, or email: leenelson@mt.gov. Comments on the EA will be accepted until 5:00 pm, October 1, 2007. Please include name and address with any comment. This level of public involvement is believed adequate for the proposed project, as similar and recent efforts in the Dillon Area (Dyce Creek) and the Elkhorn Mountains near Helena, have produced no significant issues or controversy. If significant concerns are raised concerning this EA, a public open house to discuss the issues will be scheduled.

3. Duration of comment period.

The public comment period for this proposal is from September 7, 2007, to October 8, 2007. Written comment can be mailed to:

Lee Nelson
Montana Fish, Wildlife & Parks
415 South Front Street
Townsend, MT 59644
E-mail: leenelson@mt.gov

4. Name, title, address and phone number of the person(s) responsible for preparing the EA:

Lee Nelson
Fisheries Biologist
Montana Fish, Wildlife & Parks
415 South Front Street
Townsend, MT 59644
Phone: 406-495-3866
E-mail: leenelson@mt.gov

References

- FWP. 1999. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana. Montana Fish, Wildlife and Parks, Helena, Montana.
- Leary, R.F., B.B. Shepard, B.W. Sanborn, W. P. Dwyer, J.A. Brammer, R.A. Oswald, A. Tews, D. Kampwerth, M. Enk, R. Wagner, L. Kaeding. 1998. Genetic Conservation of Westslope Cutthroat Trout in the Upper Missouri River Drainage. Prepared by: The Upper Missouri Westslope Cutthroat Trout Committee. Montana Fish, Wildlife and Parks, Helena, Montana.

- Shepard, B. B., B. Sanborn, L. Ulmer and D.C. Lee. 1997. Status and risk of extinction for westslope cutthroat trout in the upper Missouri River Basin. *North American Journal of Fisheries Management* 17:1158-1172.
- Shepard, B. B., B.E. May and W. Urie. 2003. Status of Westslope Cutthroat Trout in the United States: 2002. Montana Fish, Wildlife and Parks for the Westslope Cutthroat Trout Interagency Conservation Team, Helena, Montana.
- Shepard, B.B and L. Nelson. 2004. Conservation of Westslope Cutthroat Trout by Removal of Brook trout Using Electrofishing. Report to Montana Fish, Wildlife and Parks Future Fisheries Improvement Program, Helena, Montana.

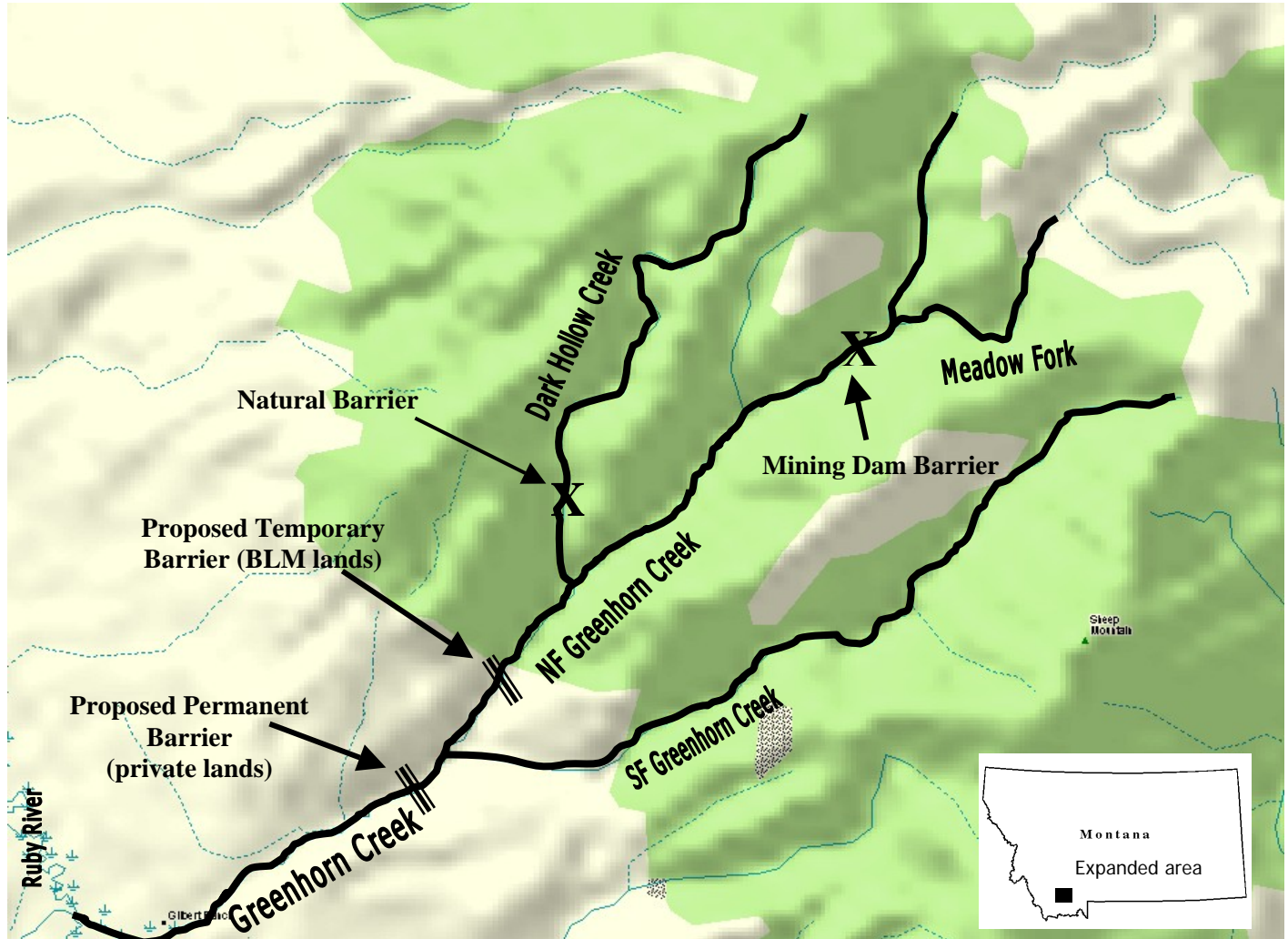


Figure 1. Map of the Greenhorn Creek drainage, including existing and proposed fish barriers. Proposed barrier locations are approximate. Map scale: 1 inch equals 1.2 miles.

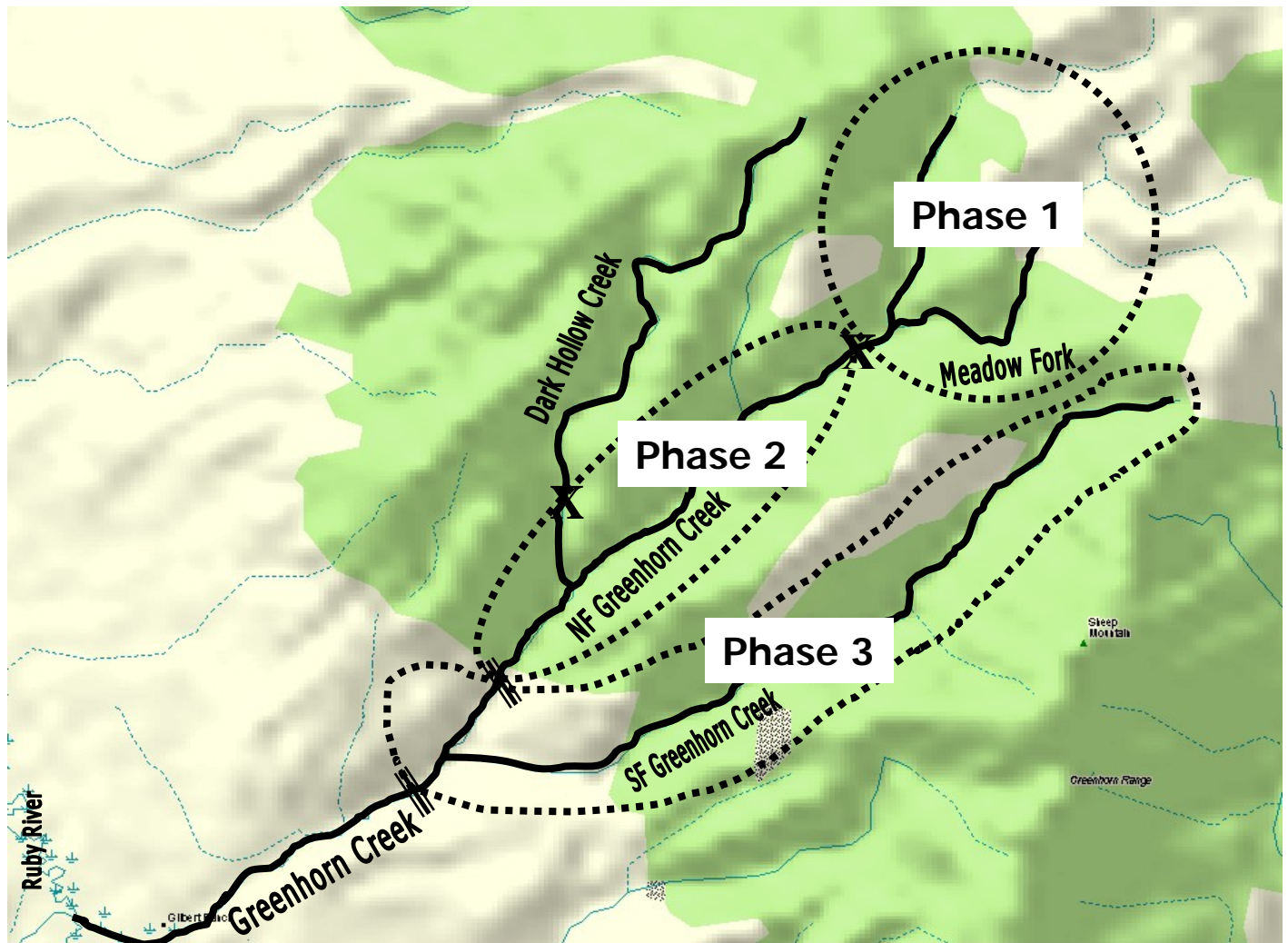


Figure 2. Map of the Greenhorn Creek drainage, and successive phases of proposed nonnative trout removal efforts. Each phase would adjoin with existing or manmade barriers as described in Figure 1. Map scale: 1 inch equals 1.2 miles.



Photo 1. Historic mining dam on the North Fork of Greenhorn Creek. This barrier would be used as an “anchor point” between Phase 1 and Phase 2 of the proposed nonnative trout removal efforts.



Photo 2. Example of a “crib-style” fish barrier on Whites Creek near Townsend, MT. The specific design of the proposed permanent barrier on Greenhorn Creek would be determined through evaluation of the barrier site and expected stream flows.